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| 10/560,548 | 01/30/2006 | Daniel Dreyer | 534P015 | 1051 |
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| Nields & Lemack 176 E. Main Street Suite #5 Westboro, MA 01581 | | | EXAMINER RADEMAKER, CLAIRE L | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/560,548

Applicant(s)

DREYER ET AL.

Examiner

CLAIRE L. RADEMAKER

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/9/2006; 12/12/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-221 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 19-21 is/are rejected.
- 7) ☒ Claim(s) 8-18 & 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/12/2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statements(s) (PTO/SB08)
Paper No(s)/Mail Date 3/9/2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed March 9, 2006 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. Specifically the following foreign references have been received, but corresponding explanations of relevancy have not been received: DE 29-24-239, DE 33-35-547, EP 0-121-771, and PCT/EP2004/006307. However, these references have been placed in the application file and the information referred to therein has been considered.

Drawings

2. The drawings are objected to because it is unclear what reference character "3" is pointing to in Figure 2. Reference characters "1" and "3" in Figure 2 both appear to be pointing to the microporous sheet. For Examination purposes, reference character "3" was interpreted as intending to point to protrusions/ribs, which do not appear to be present in the drawing.

Furthermore, the drawings are objected to under 37 CFR 1.83(a) because they (specifically Figure 2) fail to show protrusions / ribs "3" as described in the specification and as shown in Figure 1. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:

Reference characters "2" and "2'" and "3" are used and described inconsistently throughout the Specification. For example, page 12 of the Specification states "ribs 2, 2', 3," while page 16 states "In Figure 2, the ribs 2' have the same height as the protrusions 2. In accordance with the above description, the welding can also take

place, however, such that the height of the protrusions 2' decreases compared with the protrusions 2."

The Specification states that "any embodiment mentioned for the ribs and/or protrusions in the middle area 4 can of course be combined with any embodiment mentioned for the ribs and/or protrusions in the side edge areas 5" (Specification, page 12).

For examination purposes the terms "rib" and "protrusion" have been considered synonymous and interchangeable. Furthermore, reference character "2" is interpreted as meaning the ribs/protrusions within the middle area (4) of the microporous film (Specification page 11; Figure 1), reference character "2'" is interpreted as meaning the outermost two ribs/protrusions which are adjacent to the edge areas (5) of said microporous film (Specification pages 11 & 16; Figure 1), and reference character "3" is interpreted as meaning the ribs/protrusions within the edge areas (5) (Specification page 11; Figure 1).

Appropriate correction is required.

Claim Objections

4. Claims 1-6, 13, 19, & 21 are objected to because of the following informalities:

Claims 1-6, 13, 19, & 21 contain reference characters "2" and "2'" which are inconsistently labeled/defined throughout the claims. For example, claim 1 states "a number of protrusions (2, 2')" in line 5, claim 2 states "some of the protrusion (2')" in line

3, and claim 3 states "the ribs (2, 2') which run vertically each comprise a rib (2') in lines 2-3.

For examination purposes the terms "rib" and "protrusion" have been considered synonymous and interchangeable. Furthermore, reference character "2" is interpreted as meaning the ribs/protrusions within the middle area (4) of the microporous film (Specification page 11; Figure 1), and reference character "2'" is interpreted as meaning the outermost two ribs/protrusions which are adjacent to the edge areas (5) of said microporous film (Specification pages 11 & 16; Figure 1).

Claims 1-2 & 19 are further objected to because they contain the following typographical errors: the phrases "the sheet (1)" (claim 1, line 9 & claim 10, line 11) and "the film (1)" (claim 2, line 3) should read "the microporous sheet (1)" in order to use consistent terminology throughout the claims.

Claims 5-6 are further objected to because they contain the limitation "weld seams (8)" (claim 5, line 3 & claim 6, line 3) which was prior introduced as "welded joints (8)" (claim 1, line 11). These limitations in claims 5-6 should also read "welded joints (8)" in order to use consistent terminology throughout the claims.

Claim 22 is objected to because it contains the limitation "the fleece material (7) in line 2, which was prior introduced as a "planar fleece material (7) in claim 19, lines 8-9. This limitation in claim 22 should also read "planar fleece material (7)" in order to use consistent terminology throughout the claims.

Appropriate corrections are required.

5. Claims 8-22 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only and cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abbe et al. (US 3,159,507) in view of Zucker (WO 03/026038).

With regard to claims 1-2, Abbe et al. teaches a separator material for a battery (col. 1, lines 10-15), where said separator material for forming a separator comprises a first layer in the form of a microporous sheet (col. 2, lines 37-41 & 56-63 & col. 4, lines 10-27 & 48-52; Figure 7), which can be made of glass fibers and a synthetic resin of hydrophilic character (col. 5, lines 11-16) and can have a number of protrusions / ribs, each defining an area of increased film thickness, on at least one face of a base sheet (col. 4, lines 23-27 & col. 5, lines 7-10; Figure 7), and at least one second layer (col. 2, lines 37-41, col. 4, lines 10-12, & col. 5, lines 7-10; Figure 7) in the form of a planar fleece material which is located on a face of the microporous sheet (col. 4, lines 10-12 &

col. 5, lines 7-10; Figure 7), wherein the planar fleece material is bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7), and where the fleece material can be located at least at the level of the surface of the base sheet in the area of the welded / fused joints and does not penetrate into this (Figure 7), but fails to specifically state that said separator material can be used in a lead-acid accumulator / lead-acid battery or that said microporous sheet can be made of a thermoplastic material.

While Abbe et al. fails to specifically state that said separator material can be used in a lead-acid accumulator / lead-acid battery, it is noted a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone (*In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976); *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951)). In claims 1 & 19, the intended use of said separator material for a lead-acid accumulator / lead-acid battery is not given patentable weight.

Zucker teaches a separator material for forming a separator for a lead-acid accumulator / battery (page 1, paragraph 1), wherein the separator material comprises a first layer in the form of a microporous sheet (3, page 6, paragraph 4), which is made of a thermoplastic material (page 6, paragraph 4 - page 7, paragraph 1) and can have a number of protrusions / ribs, each defining an area of increased film thickness, on at least one face of a base sheet (page 11, paragraph 5 - page 12, line 2), and at least one

second layer (2, page 6, paragraph 2) in the form of a planar fleece material which is located on a face of the microporous sheet (page 16, paragraph 2), wherein the at least one planar fleece material can be bonded to the microporous sheet by ultrasonic welding / ultrasonic sealing (page 16, paragraph 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of said microporous sheet comprising a thermoplastic material of Zucker to the microporous sheet of Abbe et al. because thermoplastic material is known to be an effective microporous separation material and one would have a reasonable expectation of success in doing so.

8. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abbe et al. (US 3,159,507) and Zucker (WO 03/026038), as applied to claims 1-2 above, and further in view of Kawai et al. (US 3,210,218).

The disclosure of Abbe et al. and Zucker as discussed above are fully disclosed herein.

With regard to claims 3-4, modified Abbe et al. fails to teach that the protrusions/ribs run vertically and extend over the entire length of the separator or that the separator comprises outermost ribs in each of the two side edge areas.

Kawai et al. teaches a battery separator (col. 1, lines 12-13; Figures 1-3) comprising a microporous sheet (2, col. 1, lines 62-70 & col. 4, lines 49-51) which has protrusions / ribs that run vertically and extend over the entire length of the microporous

sheet (col. 1, lines 65-70; Figure 2), where said microporous sheet comprises outermost protrusions/ribs in each of the two side edge areas (Figure 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the design of the microporous sheet with protrusions / ribs of Kawai et al. to the microporous sheet with protrusions / ribs of modified Abbe et al. in order to create a battery separator which has high mechanical strength (col. 1, lines 62-70 & col. 3, lines 40-45).

With regard to claims 5-6, modified Abbe et al. fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints.

While modified Abbe et al. fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints, it would have been obvious to one of ordinary skill in the art that the welded joints could be made continuous in order to provide a better seal or could be made discontinuous in order to decrease manufacturing time and cost.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abbe et al. (US 3,159,507) and Zucker (WO 03/026038), as applied to claims 1-2 above, and further in view of Farahmandi et al. (US 2001/0020319).

The disclosure of Abbe et al. and Zucker as discussed above are fully disclosed herein.

With regard to claim 7, modified Abbe et al. fails to specifically state that the welded joints can be bonded by spot-welding.

Farahmandi et al. teaches that spot welding and ultrasonic welding are two suitable bonding techniques (paragraph [0235]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of bonding via spot-welding of Farahmandi et al. to the bonding technique of modified Abbe et al. because spot-welding is known to be an effective method of bonding and one would have a reasonable expectation of success in doing so.

Furthermore, it is noted that the product-by-limitations of claim 7 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (*In re Thorpe*, 227 USPQ 964, 1985). Moreover, a product-by-process limitation is held to be obvious if the product is similar to a prior art product (*In re Brown*, 173 USPQ 685, and *In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974)). Claim 7 as written does not distinguish the product of the instant application from the product of the prior art.

Conclusion

10. The prior art made of record and not relied upon which is considered pertinent to applicant's disclosure is as follows: Umagami (JP 09-306463) discloses a separator for a lead battery where said separator comprises a first layer and a second layer, where

said first layer comprises a plastic sheet with a plurality of protrusions / ribs, and said second layer comprises a fiberglass mat, wherein said second layer is laid onto the protrusions / ribs of said first layer and laminated to said first layer; Mann et al. (US 2,565,868) discloses a separator for a battery and a method of making said separator, where said separator comprises a first layer and a second layer, where said first layer comprises a plate with ribs and where said second layer comprises a fiber glass sheet, wherein said second layer is laid onto the protrusions / ribs of said first layer and glued to said first layer.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAIRE L. RADEMAKER whose telephone number is (571)272-9809. The examiner can normally be reached on Monday - Friday, 8:00AM - 4:30PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. L. R./
Examiner, Art Unit 1795

/Alexa D. Neckel/
Supervisory Patent Examiner, Art Unit 1795